7th Grade Tech Steps – Random Climb – Snowball Competition

Day 1

BR: As students login to computers, go over the problem situation and pass out the worksheet.

T: Have students open the Excel file for the exercise and save the file as Snow Ball Competition in their folder. Through direct instruction and guiding student responses, discuss the formula to randomly create the statistics for cells A3 thru A62. Have students to answer questions 1 and 2 on the sheet. Find the min and max of the data by creating formulas. Complete questions 3 and 4.

Create a scatter plot of the data and discuss what is displayed. Use F9 key to reset the data for a new model. Ask students to complete questions 5 and 6. Have students to use their graphs and/or formulas to find the answer to number 7 and discuss as a class.

Day 2 - 3

BR: Review material from day one as a class. Pass out papers from yesterday.

T: Open Excel files from yesterday. Go over how to tally the number of times the won or lost the snow ball fight on the chart before assigning students the task of running the trial 30 times. Have students complete #8 and #9.

As a group discuss #8 and #9’s results. If time, have students compile all results in their row to determine the probability before answering #10 and #11. Discuss as a class.

Have students work in pairs to complete the activity described. Each group will have a different topic to research in their data before answering the three questions provided. Present if there is time at the end of class.

Topics:

1. If you either eat 100 calories or burn 100 calories every 10 minutes, what is the possibility of eating or burning over 1000 calories in 10 hours?
2. If a store owner either orders 5 items or sells 5 items each hour, what is the probability of ordering or selling 50 items in 2.5 days?
3. If a delivery man makes 10 trips to the mall or 10 trips to the university each day, what is the probability that there will be over 100 deliveries to the mall or 100 deliveries to the university in one day?
4. If it snows 1 inch each day or if 1 inch of water evaporates each day, what is the probability of having 10 inches of snow or having 10 inches of water evaporated in two months?
5. If a hiker is 100 miles up a cliff and moves up or down 10 feet at a time, what is the probability that he will reach the summit or reach the bottom of the cliff?

Day 1 Step-by-Step Instructions

1. Go to cabellcountyteachers.wikispaces.com and open the Template.
2. Open the Excel file for the exercise and Save the File with the Name Snow Ball Fight.
3. Click on cell A3 and grab the right corner. Pull to cell A62 and drop. Complete questions 1-2.
4. In cell C2, type Max. In cell D2, type the formula =max(A3:A62). In cell C3, type Min. In cell D3, type the formula =min(A3:A62). Complete questions 3-4.
5. Click on column A, hit insert, and Scatter. Select the graph with points and straight lines. Complete question 5.
6. Hit F9 and answer #6. Discuss and complete #7.
7. Use F9 to generate the answers for #8.
8. Complete #9 -11 and discuss.

Snowball Competition

Problem Situation: You are competing in a snow ball competition. For every snowball you throw that hits an opponent, you receive one point. For every snowball you throw that misses, you lose one point. When your score reaches ten points, you are considered the winner. When your score reaches a negative ten points, you are removed from the game. What is the probability that you will win the competition?

1. In your trial, how many points did you receive after:
2. 1 snowball? \_\_\_\_\_\_ b. 2 snowballs? \_\_\_\_\_\_ c. 5 snowballs? \_\_\_\_\_\_

d. 10 snowballs? \_\_\_\_\_\_ e. 25 snowballs? \_\_\_\_\_\_ f. 50 snowballs?\_\_\_\_\_\_

1. At the end of your trial, what is in cell A62? What does it mean?
2. What was the maximum number of points that you had at any one time? What does this mean?
3. What was the minimum number of points that you had at any one time? What does this mean?
4. Why should you use the graph? What does it show?
5. What happened when you hit the F9 key? What does this mean for our problem situation?
6. How can you tell the number of times that you won the competition? Lost?

|  |  |  |
| --- | --- | --- |
| Trials Conducted | Won | Lost |
|  |  |  |
| Trials Conducted | Won | Lost |
|  |  |  |

1. What is the probability that you will:

a. win? b. lose?

|  |  |  |
| --- | --- | --- |
| Trials Conducted | Won | Lost |
|  |  |  |

Now, use the total of the trial results for everyone in your row. What is the probability that you:

1. win? b. lose?
2. Is the row’s probability more or less accurate? Why or why not?

Group Activity

1. As a group, choose one of the questions from the board to model in Excel. What is your topic?
2. Create an Excel spreadsheet that randomly generates cells A3 to A62. What formula did you use?
3. What is the maximum of your data? What does it mean?
4. What is the minimum of your data? What does it mean?
5. Draw a rough sketch of your graph.
6. Use the back of this sheet to tally 30 trials. How often did you:

a. succeed? b. not succeed?

1. After 30 trials, what is the probability of:

a. succeeding? b. not succeeding?

1. When combined with your partner, what is the probability of:

a. succeeding? b. not succeeding?

1. How did the Excel spreadsheet assist you?
2. What might you have had to do differently if you did not use Excel?
3. Explain how Excel might be used in life. (Use examples from this activity.)